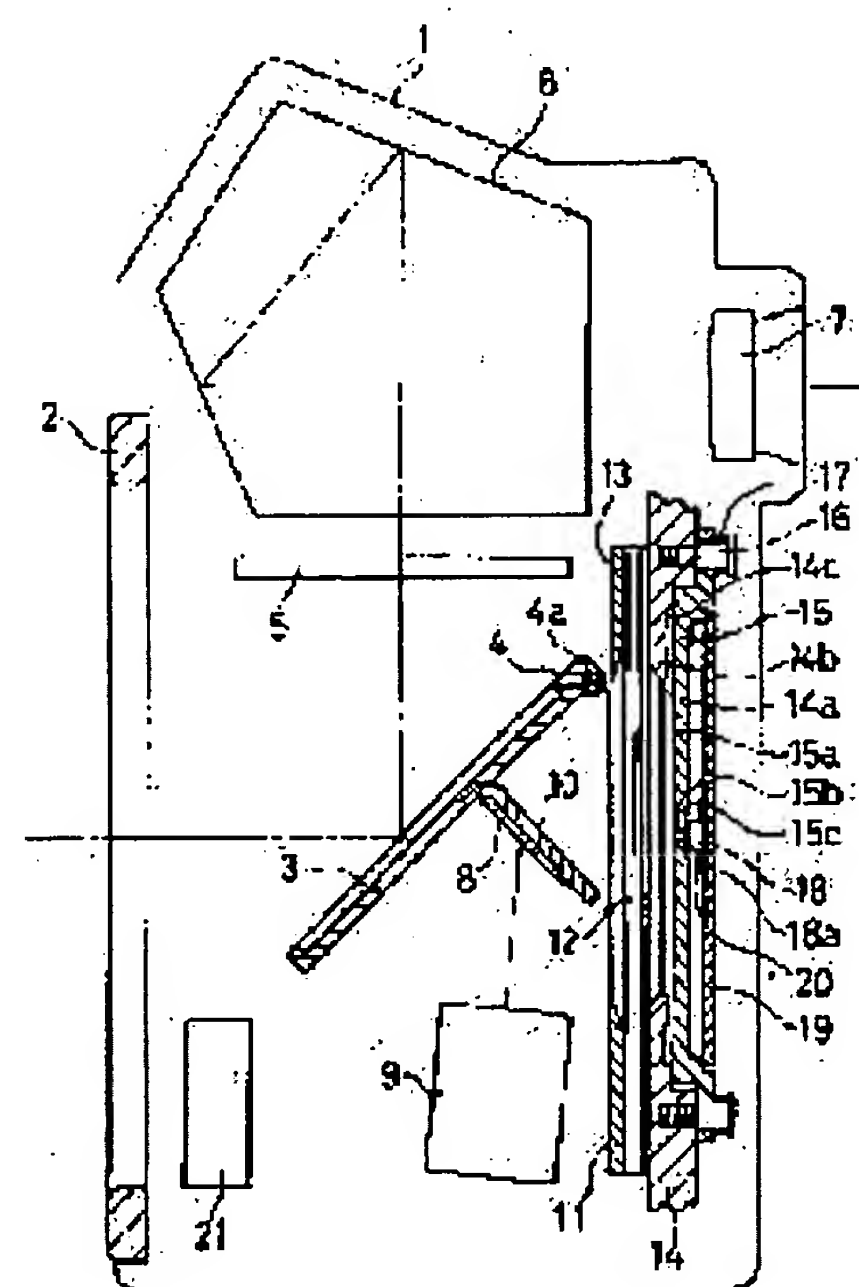


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G03B 9/08

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corresponding to the inside of a photographic image plane, and the sensor 18 for detecting the traveling of a shutter blade is provided at the aperture part 15b so as to transmit the output from the sensor 18 provided inside the camera to the shutter testing tool attached to the camera and detect the traveling state of the shutter blade.



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CLAIMS

- [Claim(s)]
- [Claim 1] The camera characterized by having countered the photography screen frame, having been arranged, having formed opening in the location corresponding to within the limit [of said film sticking-by-pressure plate / said / photography screen] in the camera equipped with the film sticking-by-pressure plate always mostly fixed to the wrap location in said photography screen frame, and forming the sensor for shutter wing transit detection in this opening.
- [Claim 2] The camera possessing the means of communications which communicates the output of said sensor for shutter wing transit detection to the exterior according to claim 1.
-

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] The film sticking-by-pressure plate which this invention countered the photography screen frame and has been arranged is related with the camera of the type with which it is mostly fixed to the wrap location, that is, a back lid does not always open said photography screen frame.

[0002]

[Description of the Prior Art] Conventionally, film loading opens a non-illustrated back lid wide, is performing it, and had become the configuration which a photography screen frame exposes in this condition. Therefore, the non-illustrated shutter test machine could be attached in the photography screen frame, transit of the shutter wing of a focal plane shutter was detected in the finished-product condition of a camera, and checking exposure precision was completed easily.

[0003] However, said shutter test machine cannot be attached in a photography screen frame in the camera which a back lid which is proposed by JP,3-202830,A does not open. JP,4-340942,A is proposed as the cure. This can be made to do a light exposure check by establishing a hole in a film sticking-by-pressure plate, preparing opening in a back sheathing member further, and forming the lid which plugs up this opening.

[0004]

[Problem(s) to be Solved by the Invention] However, in the above-mentioned conventional example, since opening needed to be prepared in the sheathing member and the lid needed to be further formed as another member, while restraining the degree of freedom of an appearance operating member greatly, the exterior also became unsightly and had further the problem that the dependability over the protection-from-light engine performance also fell.

[0005] (The purpose of invention) The purpose of this invention is offering the camera which the dependability over the protection-from-light engine performance can also raise while realizing the free layout of an appearance operating member, and a beautiful appearance.

[0006]

[Means for Solving the Problem] This invention transmits the output of the sensor for shutter wing transit detection which formed opening in the location corresponding to within the limit [of a film sticking-by-pressure plate / photography screen], formed the sensor for shutter wing transit detection in this opening, and was formed in the interior of a camera to the shutter test tool equipped by this camera, and he is trying to detect the run state of a shutter wing.

[0007]

[Example] Hereafter, this invention is explained to a detail based on the example of illustration.

[0008] Drawing 1 - drawing 3 are drawings concerning the 1st example of this invention, and drawing 1 is the sectional view showing the basic configuration of the camera in this example.

[0009] In drawing 1 , 1 shows the appearance of a single-lens reflex camera, and photography of it is attained by attaching a non-illustrated interchangeable lens in the camera mounting 2. 3 is held by the attachment component 4, is the Maine mirror 3 currently supported rockable focusing on shaft 4a, and has become a half mirror.

[0010] The light which carried out incidence through the non-illustrated interchangeable lens, and was reflected in this Maine mirror 3 is led to the focus plate 5, and finder observation of a photography person is presented with it through a pentaprism 6 and an ocular 7. Moreover, it reflects by the submirror 8 and the light which penetrated this Maine mirror 3 is led to focal detection equipment 9. Said submirror 8 is held at an attachment component 10, and the attachment component 10 is supported rockable to the attachment component 4.

[0011] Since the above-mentioned configuration is already well-known, the detailed explanation beyond this is omitted.

[0012] For 11, as for a point wing group and 13, a focal plane shutter and 12 are [a back wing group and 14] the bodies of a camera. 15 has opening 15b, has crevice 15c on the background of film maintenance side 15a further, is the film sticking-by-pressure plate with which the mask member 20 was stuck, and is attached in the body 14 of a camera through the stage screw 16 and a spring 17. 14a is [an inner rail and 14c of a photography screen frame and 14b] outside rails.

[0013] Film maintenance side 15a is guaranteed to outside rail 14c according to the energization force of a spring 17, it guarantees the clearance between inner rail 14b and film maintenance side 15a by *****, and said film sticking-by-pressure plate 15 holds the non-illustrated film. Positioning of the vertical direction of a non-illustrated film is performed by outside rail 14c. Moreover, the film sticking-by-pressure plate 15 can escape and ease the film advance force increase by the unusual film peculiarity near a film point etc. according to an operation of a spring 17 at the time of film auto-loading.

[0014] 18 is photosensor and is held with soldering etc. possible [a flow in the lead 18a section] at the below-mentioned circuit board 19. Although 19 is the circuit board which fixed with an anchoring means by which it does not illustrate, to the film sticking-by-pressure plate 15 and various circuit elements are attached besides the above-mentioned photosensor 18, the explanation is omitted here.

[0015] 21 is a lens communication device which usually has signal communication facility with a non-illustrated interchangeable lens in photography, has the output monitor terminal of said photosensor 18 further, and can perform the precision check of a focal plane shutter 11 easily.

[0016] Drawing 2 is a front view for explaining the above-mentioned mask member 20 and opening 15b.

[0017] The mask member 20 has the protection-from-light engine performance, is arranged in the center of photography screen frame 14a, and has oblong slit 20a. This slit 20a is set up still more thinly to opening 15b of the film sticking-by-pressure plate 15. Although it is desirable to make it thin as much as possible as the performance guarantee as a film sticking-by-pressure plate 15 and a diaphragm of the light led to photosensor 18 as for opening 15b, since there is a limitation on manufacture, the light which adds the mask member 20 and is led to photosensor 18 has been restricted.

[0018] Drawing 3 is the sectional view showing the situation at the time of a shutter precision check in the finished-product condition of a camera.

[0019] 25 is a shutter test tool and is attached in the camera mounting 2. At this time, the communication link terminal block 22 contacts the lens communication device 21 according to the energization force of a spring 23, and the monitor of the output of photosensor 18 becomes possible. Moreover, the shutter test tool 25 generates the parallel light 24 from non-illustrated light equipment. By performing release actuation of a camera in the time of a shutter second predetermined in this condition, it becomes possible to perform a shutter precision check.

[0020] Hereafter, an outline of operation is shown.

[0021] If it sets at the time of the second of the request which wants to measure the time of the shutter second of a camera and non-illustrated release ** is operated, it rotates clockwise focusing on shaft 4a, and further, the submirror 8 also interlocks and moves and the Maine mirror 3 will be in the mirror rise condition of drawing 3. The front-and-rear wing group 12 starts, and the back wing group 13 starts behind at the time of the set-up second. In a mirror rise condition, the parallel light 24 reaches to the shutter wing group 12 and the 13 sections, and although it goes on in the direction of a film plane from slit opening formed by the slit formation wings 12a and 13a, unless slit formation wing 12a of a point wing runs to middle of the screen, the parallel light 24 does not reach to photosensor 18. If the end face of slit formation wing 12a runs to middle of the screen, the parallel light 24 will reach to photosensor 18 through opening 15a and slit 20a, and will produce a sensor output. This sensor output is sent to the shutter test tool 25 through the lens communication device 21 and the communication link terminal block 22, and measurement of shutter precision is performed.

[0022] The sensor output of photosensor 18 and an art are explained using drawing 4.

[0023] In drawing 4, 26 is the sensor output of photosensor 18 and generates standup output 26a by passage of slit formation wing 12a of a point wing. In this case, since slit 20a has width of face, it has minute time amount by the peak from an output 0. Moreover, falling output 26b is generated by passage of slit formation wing 13a of an aftershaft root. This also has minute time amount for the same reason as ****. As the cure, a data sampling is performed in advance, the peak of the sensor output 26 is detected, and the middle level is made to memorize as a trigger level. If above-mentioned camera release actuation is made to perform and it reaches by this at the condition of drawing 3, i.e., the A point in drawing 4, at the time of a shutter test, a trigger will start automatically and it will become possible to obtain the exact measured value illustrated by the B point.

[0024] here -- as the measurement method of shutter precision like drawing 4 -- an applicant for this patent -- prior -- although it is well-known the bottom at JP,54-81834,A, since it became independent to a camera and non-Prefectural

Police as a shutter test tool, the example of a configuration of the control circuit of a camera and the shutter test tool 25 in this example is shown in drawing 5.

[0025] In drawing 5, 51 is a circuit group by the side of a camera, and 52 is a circuit group by the side of the shutter test tool 25.

[0026] Within the camera side-circuit group 51, the output of photosensor 18 is amplified by the amplifying circuit 53, is transmitted to the shutter test tool side-circuit group 52, and is inputted into the peak hold circuit 54 and the analog delay circuit 55. The peak hold circuit 54 holds the peak value of an input signal, and sends the output of a fixed electrical potential difference to an attenuation circuit 56. In an attenuation circuit 56, input voltage is attenuated to one half, and it inputs into a comparator circuit 57. On the other hand, the analog delay circuit 55 is an analog delay circuit which has a time delay longer than the rise time of the output of photosensor 18, delays the output signal by the side of a camera, and is sent to a comparator circuit 57. In a comparator circuit 57, when the analog output sent from one half of the reference voltages and the analog delay circuits 55 of the peak value sent from the above-mentioned attenuation circuit 56 is measured and input signal level is in agreement, an output pulse is generated. That is, it is equivalent to the A point and B point in drawing 4. This output carries out Kaisei of the gate circuit 59 in an A point, and is made to close in a B point. A clock pulse is inputted into a counter 60, only when the clock pulse of a frequency higher enough than the time of the highest shutter second is inputted into the gate circuit 59 from the clock pulse generating circuit 58 and Kaisei of the gate circuit 59 is carried out. The time of a shutter second is measured by carrying out counting of this clock pulse with a counter 60.

[0027] (The 2nd example) Drawing 6 and drawing 7 are drawings showing the outline configuration of the camera (the single-lens reflex camera is made into the example) in the 2nd example of this invention, the same part as drawing 1 attaches the same sign, and the explanation is omitted.

[0028] In this 2nd example, measurement of two or more exposure times of a photography screen is enabled to having measured the exposure time of only the center of a photography screen in the 1st above-mentioned example.

[0029] Drawing 6 is the sectional view showing the situation at the time of a shutter precision check, and drawing 7 is drawing showing the layout of photosensor.

[0030] In these drawings, 101,102,103 is photosensor and is attached in the circuit board 104 by the same approach as the 1st example. Slits 105a, 105b, and 105c are formed also in the film sticking-by-pressure plate 105, and the mask member 106,107,108 is stuck on Crevices 105d, 105e, and 105f like the 1st example, respectively. As shown in drawing 7, the slits 106a, 107a, and 108a to photography screen frame 14a are arranged the center near the upper limit, and near the lower limit.

[0031] By the above configuration, photosensor 101,102,103 carries out sequential detection of the exposure timing formed by the slit formation wings 12a and 13a serially. this thing -- measurement of the three above-mentioned exposure times, and the slit formation wings 12a and 13a -- measurement of each transit speed is attained.

[0032] As mentioned above, although the layout of photosensor was explained, in the camera which cannot open a back lid as shown in each example, a user cannot check a wing run state but there is possibility of having anxiety. It is also possible to perform information presentation to a user as that cure using the output of the built-in photosensor shown in each of this example.

[0033] The photosensor for shutter wing transit detection forms in the interior of a camera, the need of prepare the covering device material which closes opening and this to a sheathing member like the former since it is consider as the structure which can detect this output by the shutter test tool 25 through the lens communication device 21 is lose, it can carry out (a beautiful appearance is realizable), and, according to each above example, the dependability over the protection-from-light engine performance which can arrange an appearance operating member freely can also raise.

[0034]

[Effect of the Invention] He transmits the output of the sensor for shutter wing transit detection which formed opening in the location corresponding to within the limit [of a film sticking-by-pressure plate / photography screen], formed the sensor for shutter wing transit detection in this opening, and was formed in the interior of a camera to the shutter test tool equipped by this camera, and is trying to detect the run state of a shutter wing according to this invention, as explained above.

[0035] Therefore, while realizing the free layout of an appearance operating member, and a beautiful appearance, it becomes possible to also raise the dependability over the protection-from-light engine performance.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the sectional view showing the outline configuration of the camera in the 1st example of this invention.

[Drawing 2] It is a front view for explaining the mask member 20 and opening 15b of drawing 1 .

[Drawing 3] In the finished-product condition of the camera of drawing 1 , it is the sectional view showing the situation at the time of a shutter precision check.

[Drawing 4] They are the sensor output of the photosensor 18 at the time of a shutter precision check, and drawing explaining an art.

[Drawing 5] It is the block diagram showing the circuitry of the part concerning the camera side shown in drawing 3 , and this invention of a shutter test tool.

[Drawing 6] In the finished-product condition of the camera in the 2nd example of this invention, it is the sectional view showing the situation at the time of a shutter precision check.

[Drawing 7] It is a front view for explaining the mask members 106-108 and Slits 106a-108a of drawing 6 .

[Description of Notations]

12 Point Wing Group

13 Back Wing Group

15 Film Sticking-by-Pressure Plate

15b Opening

18,101-103 Photosensor (sensor for shutter wing transit detection)

21 Lens Communication Device

[Translation done.]

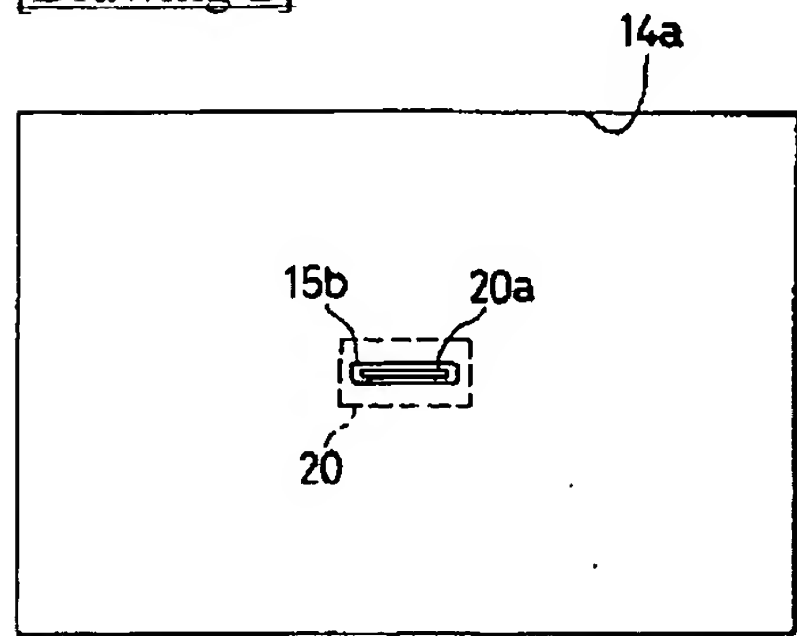
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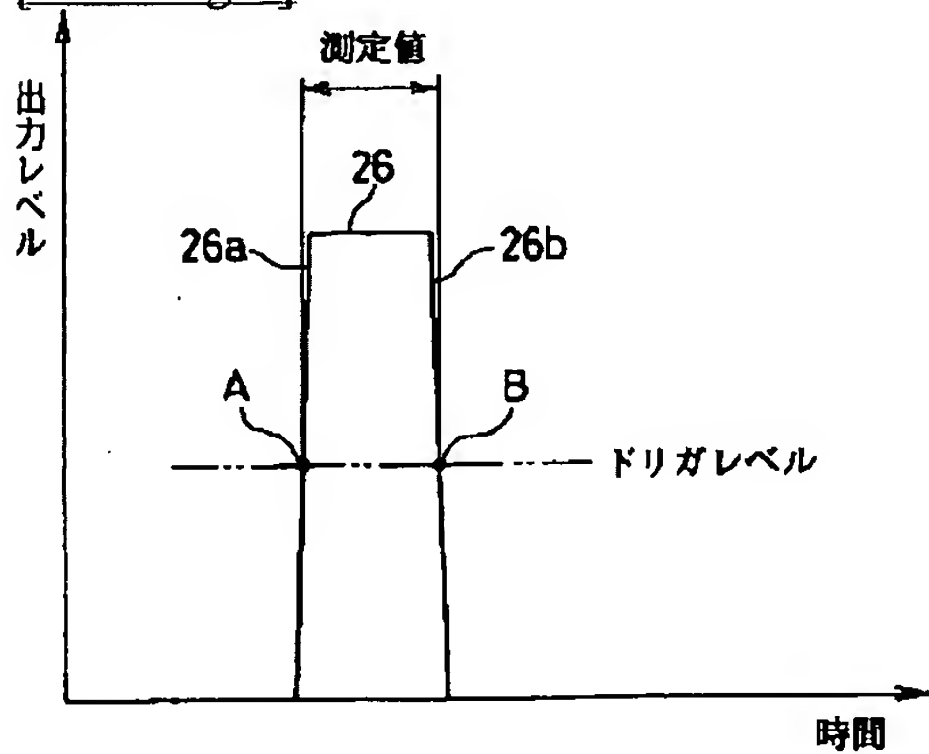
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DRAWINGS

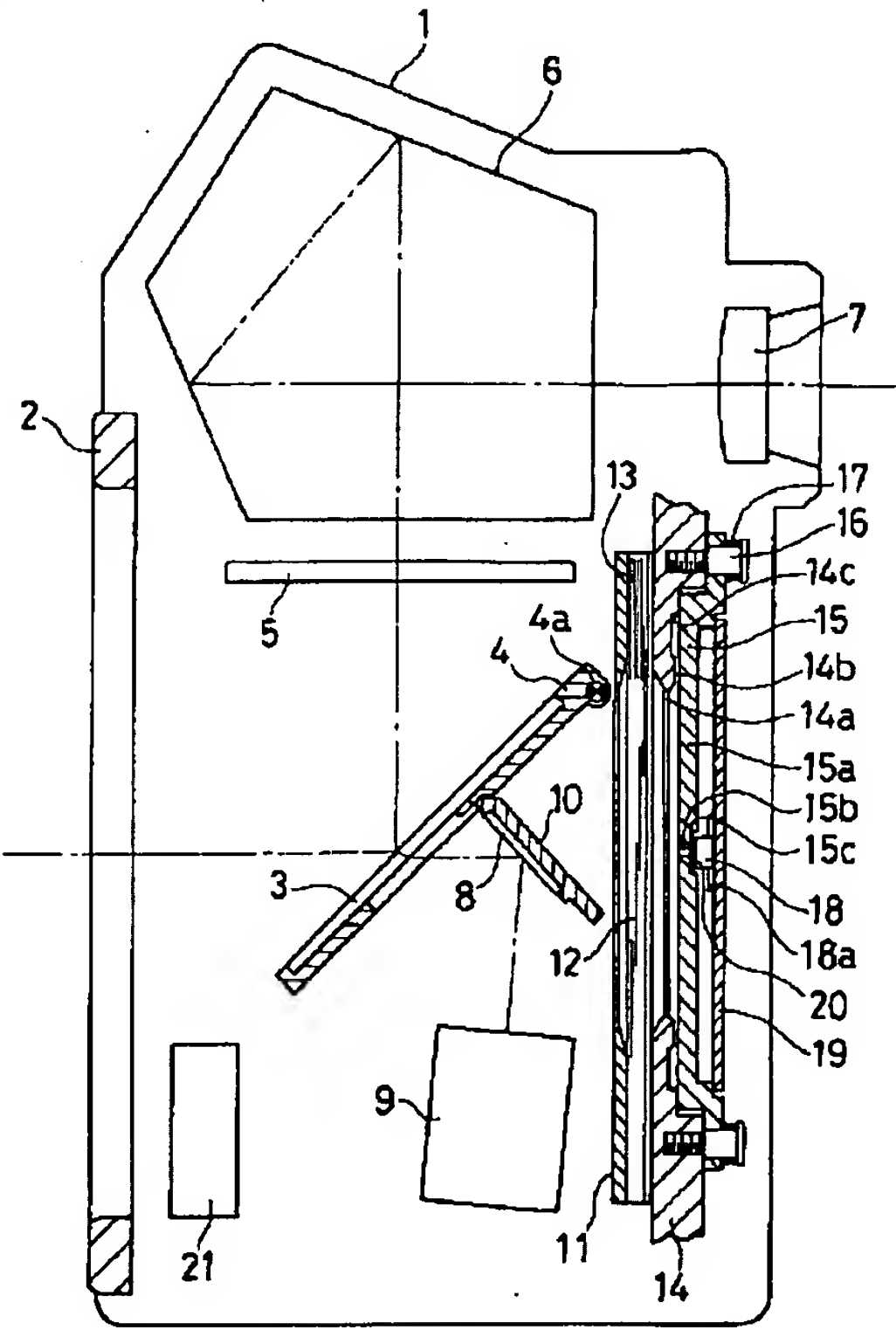
[Drawing 2]



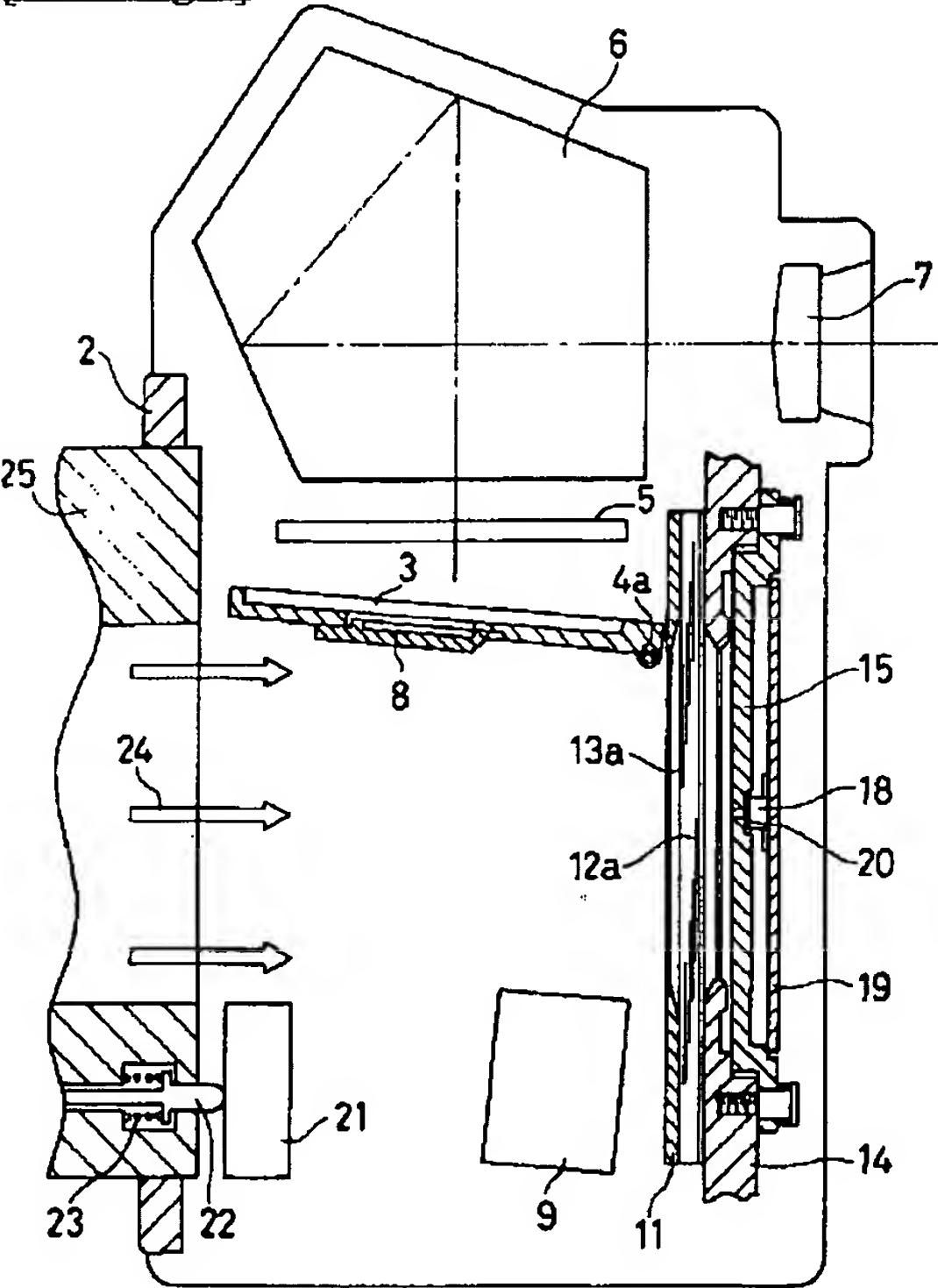
[Drawing 4]



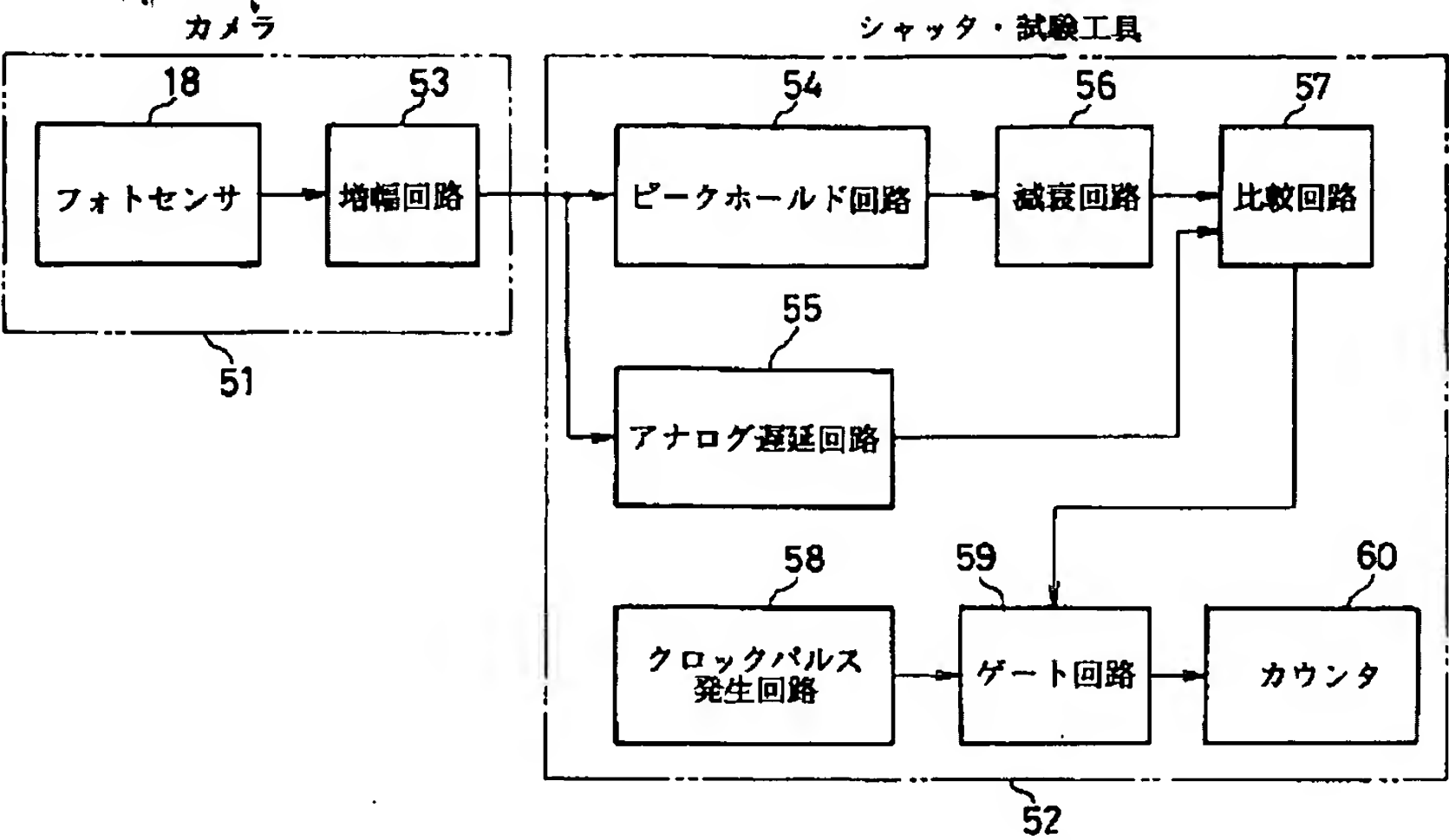
[Drawing 1]



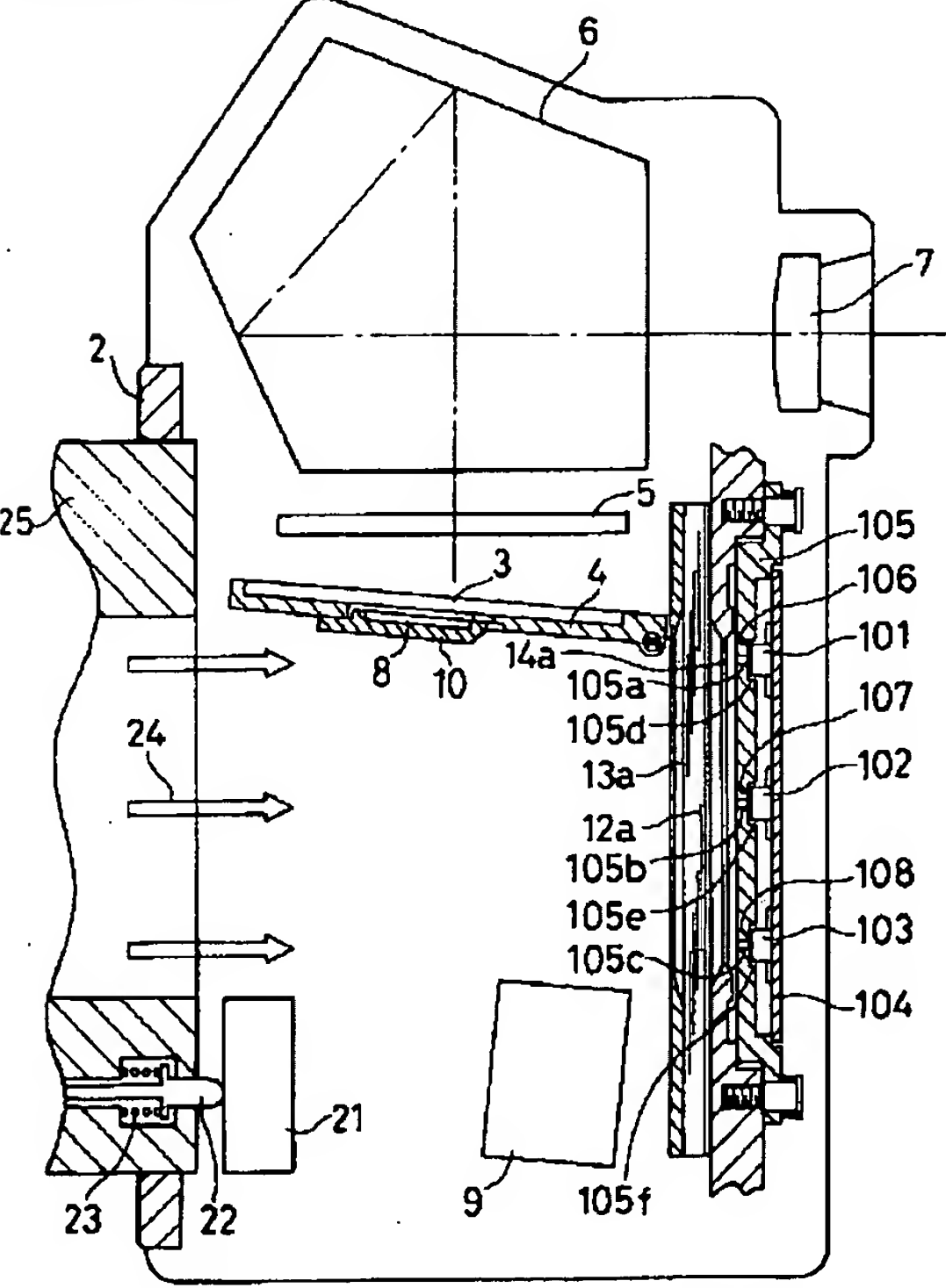
[Drawing 3]



[Drawing 5]



[Drawing 6]



[Drawing 7]

